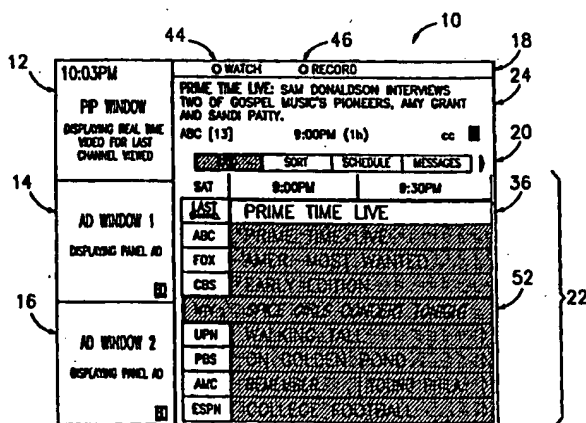# PCT

(51) International Patent Classification 6 : **H04N 5/50, 5/445**	**A1**

(11) International Publication Number: **WO 99/04561**

(43) International Publication Date: 28 January 1999 (28.01.99)

(21) International Application Number: PCT/US98/15093

(22) International Filing Date: 21 July 1998 (21.07.98)

(30) Priority Data:

60/053,330	21 July 1997 (21.07.97)	US
60/055,237	12 August 1997 (12.08.97)	US
60/055,761	14 August 1997 (14.08.97)	US
60/061,119	6 October 1997 (06.10.97)	US
60/068,375	22 December 1997 (22.12.97)	US
60/071,811	20 January 1998 (20.01.98)	US
60/071,812	20 January 1998 (20.01.98)	US
60/071,882	20 January 1998 (20.01.98)	US

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(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: SYSTEMS AND METHODS FOR DISPLAYING AND RECORDING CONTROL INTERFACES

(57) Abstract

The present invention is an improvement over previous electronic programming guides "EPG" in that it provides, among other things: improved viewer interaction capabilities with the EPG; improved viewer control of video recording (46) of future-scheduled programming; improved features of the EPG display and navigation (10); parental control of the EPG display; improved television program access by the viewer (22); improved product opportunities for the commercial advertiser to reach the viewer's profile (14, 16); improved products information access by the viewer (12); creation of the viewer's profile (36, 52); utilization of the viewer profile information to customize various aspects of the EPG (24); and utilization of viewer profile information to provide the customized presentation of advertising to the viewer (24).

H. Creation of a viewer's profile, including:

    1.   Collecting viewer profile information.

    2.   Analyzing and characterizing viewer profile information.

I. Utilization of viewer profile information to customize various aspects of the EPG; and J. Utilization of viewer profile information to provide customized presentation of advertising to the viewer.

H.   CREATION OF A VIEWER'S PROFILE

1.   Collecting viewer profile information.

The EPG requests that the viewer provide certain profile information, including but not limited to: the viewer's zip code; television, cable, and satellite services to which the viewer subscribes; the length of said subscriptions; the type of television; the age of the television; where the television was purchased; the viewer's top favorite channels; the viewer's favorite types of programs; and the times during which the viewer is most likely to watch television. If the viewer declines to provide this information, the EPG will attempt to "learn" the information as described below.

In one embodiment, the EPG is capable of distinguishing between individual viewers and develops individualized profiles. For instance, in one embodiment, each viewer has an individual PIN or other identification number. In another embodiment, each viewer uses an individualized remote. In yet another embodiment, there is an absence of a way to distinguish one viewer from another. In that case, the profile is developed for the "family."

Every time the viewer interacts with the EPG or the television, the EPG records the viewer's actions and the circumstances surrounding those actions. For instance, when the viewer changes channels, the EPG records, among other things, information about the first channel, the changed-to channel, the time that the change was made, the identification of the programming that was displayed on the first channel, the identification of the programming that was displayed on the changed-to channel, the time of the change, the identification of any advertisement that was displayed on the first channel at the time of the change, the identification of any advertisement that was displayed on the changed-to channel, and whether the viewer changed channels while in one of the EPG modes, as opposed to being in the television mode. The EPG will also record every instruction by the viewer to record or watch a program, whether the instruction is Once, Daily, Weekly, or Regularly. The EPG will also record whether the viewer changes the volume of the television audio, and if so, what circumstances surrounded the change in volume. If the viewer changes channels while in one of the EPG modes, then the EPG records information about what was displayed in each of the windows of the EPG UI before and after the change.

The EPG also records information when there is an absence of interaction between the viewer and the television or the EPG. For instance, the EPG will record whether a viewer continues to view an advertisement rather than changing channels. The EPG calculates and records the entire duration of the time that the television is on in any particular day.

2.   Analyzing and characterizing viewer profile information.

20   The viewer profile information (data collected concerning, and surrounding, a viewer's interaction with the television, the EPG (including the recording and watching functions), the Internet, the World Wide Web, and any other sources of information external to the EPG, but through which the viewer interact)) can be sent to a computer at the head end of television distribution for analysis, or in the alternative, can be analyzed by the EPG.

25   Information about the viewer is captured on an ongoing basis. Similarly, viewer profile data is updated on an ongoing basis. Accordingly, the viewer profile analysis program (the "Profile Program"), can be repeated at some time interval to incorporate additional information about the viewer that has been captured since the last analysis. Alternatively, the Profile Program is a real time program that processes each discrete item of information

30   about a viewer as the data is captured.

The viewer profile analysis program (the "Profile Program"), may be resident at the head end, in the Internet, included as part of the EPG, or distributed among these various possible locations. The Profile Program performs a variety of different types of analysis on the viewer profile data. For instance, the Profile Program performs simple statistical analysis

35   of the data collected. The Profile Program accumulates, among other things, the number of times that the viewer: interacted with the EPG during a particular viewing session; performed particular types of interactions with the EPG; watched a particular channel; interacted with the Internet during a particular viewing session, interacted with a particular website; watched

and/or recorded and/or scheduled to watch a program with a particular type of theme (*e.g.*, comedy, sports, drama, movie, sitcom, science fiction, adventure, mystery, documentary,

5   cooking, travel, etc.); and watched and/or recorded and/or scheduled to watch a program with a particular type of subject (*e.g.*, golf, tennis, football, basketball, baseball, animals, food, etc.), or a particular actor or actress. The Profile Program also calculates the duration of each viewing and compiles, among other things, statistics about the times of day and days of the week during which the viewer watches television, interacts with the EPG, or interacts with

10   the Internet or the World Wide Web.

30   Further, the types of interactions in both sets of circumstances are analyzed. In this way, the Profile Program determines Viewer Characteristics relating to, among other things: attention span; general interest in product advertisements; interest in specific types of product information; propensity for impulse buying; correlation of impulse buying habits to price ranges, product types, and advertising formats; interest in recording and/or watching future-

35   scheduled programs; interest in accessing additional levels of information concerning television programs; and interest in accessing additional levels of information concerning product advertisements including the correlation of such interest with the Viewer Preferences. Over time, with sufficient data, the EPG characterizes the viewer's sense of humor,

Yet further, the Profile Program analyzes an individual's Viewer Profile as compared to the Viewer Profiles of others. With this cross-comparison analysis, the Profile Program

10   can determine the likelihood that the subject viewer will prefer or be interested in a particular subject, product, theme, movie, episode, etc. based on comparisons to similar Viewer Profiles.

J. UTILIZATION OF VIEWER PROFILE INFORMATION TO PROVIDE CUSTOMIZED PRESENTATION OF ADVERTISING TO THE VIEWER

The EPG and the Profile Program use Viewer Profile information to tailor the presentation and scheduling of advertisements to the viewer and to customize the presentation of the EPG for the user. For instance, the EPG uses Viewer Profile information to determine whether to notify the viewer about scheduling for a program involving the viewer's favorite team, a talk show involving a star player from that team, etc. The EPG is capable of such customized notification/advertisement through e.g., an advertisement in the Ad Window, or through an advertisement in a Virtual Ad Channel Slot.

Additionally, the EPG and the Profile Program use Viewer Profile information to customize the presentation and/or scheduling of telecast advertisements that are viewable during the real time telecast of the television program that the viewer is watching. One example is customizing an overlay message to an advertisement on a local geographic basis. For instance, the EPG knows the geographic location of the individual viewer. The broadcaster can packet match on the zip code to customize the message so each zip code gets a different message, i.e., the 3 Burger Kings in the viewer's local area. In one embodiment, the customized messages can be preloaded by zip code into the memories of particular viewers' EPG's. The preloaded messages can be transmitted by a head end during off hours and stored in the viewer's terminal for use when the advertisement runs, e.g., during a television program or in a video clip in the Ad Window. The electronic trigger to run the message can be transmitted along with the television signal in real time and can identify the messages stored in the user terminal that need to be applied.

In one embodiment, customization of real-time viewing of advertisements is achieved by providing multiple channels of advertising, by tuning the television automatically to a particular advertising channel at the time during the telecast of the television program during which an advertisement is scheduled to occur, and by then tuning the television back to the viewer's chosen television program at the conclusion of the advertisement. In another embodiment, a service monitors telecasts for advertisements as they are telecast on a particular channel and inserts a change channel command in the Vertical Blanking Interval (the "VBI") when an ad is telecast, said change channel command causing the television to tune to a particular channel for a telecast of an advertisement suitable to the Viewer's Preferences.

Another way that the EPG uses Viewer Profile information is in connection with "access-content" customization of the advertising messages displayed by the EPG. Viewer Profile information will include the television program that the viewer was watching immediately before entering the EPG. The EPG can display different ads in the Guide or Service based upon the content of the television program that the viewer was watching before entering the EPG or one of the special data services accessible through the EPG. The "access-content" advertising strategy provides a much more refined way of targeting the consumer. For example, consider two viewers who are both watching television at 8:00 p.m. on a Tuesday night. When the one viewer who has been watching "Nova" enters the EPG, the EPG might display an advertisement for educational computer; whereas when the second

In one embodiment of this invention, a data base of advertising messages and virtual channel ads is stored in RAM at the viewer terminal or is accessible at a web site if the viewer terminal has an Internet connection. In either case, the advertising items in the data base are labeled with coded categories that correspond to coded category labels assigned to the telecast television programs. (Preferably, these are the same categories that are used to sort the programs in the on screen category or theme guide.) The category labels of the television programs could be stored in RAM as part of the EPG data base and retrieved from the applicable Show Information Package ("SIP") based on the information from the real time clock and the tuner setting. This information identifies a time and channel that points to the applicable SIP. After the category label of the last program the viewer was watching in the television mode is retrieved from the EPG data base, this label is matched to the corresponding label in the data base of advertising messages and virtual channel ads stored in RAM. In FIG. 1 of the drawing, the advertising items to which the labels are attached are displayed in ad windows 14 and 16 and the virtual channel ad displayed on tile 52 as described above.

Yet another way that the EPG uses Viewer Profile information is in connection with "adjacent-content" customization of the advertising messages displayed by the EPG. Viewer Profile information will include identification of the content that the viewer has currently highlighted in the EPG or related data service. Using this method, the EPG displays different advertisements depending upon, *e.g.*, which show the viewer has currently highlighted in the Grid Guide, what sport is highlighted in a sports data service, or what type of news is highlighted in a news service (international, local, etc.).

The EPG can select advertisements from various possible locations, including but not limited to: a library of advertisements stored at the viewer's terminal in RAM that have been downloaded through the VBI, stored at the head-end, or accessible through an EPG link to the Internet/World Wide Web. The advertisements may be in the form of graphics, text, video clips, audio clips, and combinations thereof. Each advertisement can be assigned theme codes, profile codes, and other selection intelligence. In one embodiment, in order to customize the advertising display, the EPG searches the library of available advertisements to locate advertisements that match criteria set by the advertisers for "access content," "adjacent content," and/or Viewer Profile information. In another embodiment, the EPG selects advertisements for display according to pre-established selection criteria.

In another embodiment, the advertisements in the library are assigned to particular television programs or classes of television programs; the history of use of the information box of the EPG is recorded, in terms of frequency of the visits, time spent during a single visit, and/or total time of all the visits; the information boxes are correlated to the television programs, and the results are analyzed to decide which advertisement to display. Instead of the information box, any other area of the EPG screen could be monitored in similar fashion to decide which advertisement to display. In each case, the advertisements in the library are assigned to the types or subjects of information displayed in the monitored area so as to target better the advertisements to the interests of the users.

In another embodiment, the advertisements in the library are also assigned to particular television programs or classes of television programs; the history of television programs entered into a "record-watch list" as shown in FIG.6 is recorded; and the results are analyzed to decide which advertisement to display.

The time of the monitored event can also be taken into account in order to distinguish between multiple users of the same EPG or related television receiver. The assumption is that the people using the EPG and watching television at different times of the day have different interests--housewives may use the EPG more in the morning, children may use it in the early evenings, and men who work outside the home may use it on Sunday afternoons.

History of use as described above can be combined with the "access-content" model described in Application No. 60/055,237 to further pin-point advertisements to the user's interests. Thus, if the users of the particular EPG selected comedies as a theme more frequently than any other theme during a prescribed period of time, three advertisements might be flagged and the final selection made therefrom depending upon which type of program the viewer was watching on television before switching to the on-screen EPG.

22. The interactive television system of claim 21, further comprising:

means for identifying a plurality of addresses for data sources, including data source addresses on a computer network such as the Internet or the World Wide Web, with data related to said advertising data;

means for selecting one or more of the said identified plurality of addresses for data sources with data related to said advertising data;

means responsive to said data source address selection for establishing a link to the corresponding data source, including data source addresses on a computer network such as the Internet or the World Wide Web;

means for displaying data from a plurality of said selected data source addresses on said display monitor in viewable form.

23. The interactive television system of claim 21, further comprising:

means for collecting data pertaining to viewer interactions with the television and with the EPG, including but not limited to viewer television watching characteristics, viewer selections from the EPG, viewer interactions with the Internet, and/or viewer interactions with the television remote control device;

means for storing said collected viewer interaction data.

24. The interactive television system of claim 23, further comprising:

means for customizing the content of advertisements in the on screen EPG display of advertising data according to said collected viewer interaction data.

25. The interactive television system of claim 23, further comprising:

means for customizing the timing and scheduling with which advertisements are presented in the on screen EPG display of advertising data according to said collected viewer interaction data.